

ECONOMICAL ESTIMATION OF THE ECOLOGICAL DEBT IN CONTEXT OF SUSTAINABLE DEVELOPMENT

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The Concept of the ecological debt was designed in the end of XX century, became the result of studies about the problems of the interaction between nature and economics. It was the attempt to unite the longings a mankind to permanent economic development with the principles of sustainable development. During this period great number of ecological debt definition was developed, but hitherto competent definition is still absent. Given definitions takes into account variety of factor: accumulated in the past and current debt from natures components quality deterioration quality; the destructions, havocs, irrational usage of ecosystems; the debt for natural resources exploitation; use biotechnology, GMO and etc. We offer the following determination of the ecological debt – it is conditionally evaluated level of surrounding natural ambience condition changes, caused by ecologically destructive activity of economic subject on territory of the certain country, which must be liquidated (compensated) for achievement of sustainable development objectives.

Scientist most often use such factors for the numerical measurement of the ecological debt in natural form: ecological footprint and ecological space, material flow amounts, etc. Besides, non-dimensional (the indicators and indexes) and economical values of the ecological debt are used.

The Development methodological principals for estimation of the economic damage has been leading since 60-h years of XX century by scientist from many institutes, including Ukrainian scientist from Kiev, Sumy, Odessa, Lugansk, Lvyv, Donetsk, etc. For this time was accumulated huge information base, allowing suitable for valuation of the damages from ecologically destructive activity. So economic damage from the natural ambience components quality deterioration (the ecologically-economic damage) can be a factor, which allows estimating the size of the ecological debt in the most precisions way, since given type of the damage practically is an economical indicator of natural factors value, which define the damage from ecologically destructive activity, as well as expenses on compensation of the damage.

Whereas, evaluation of the ecological debt is exceedingly difficult problem, which requires perfect methodological base, enormous array to information, we offer not to calculate the magnitude of the debt, but its change in the course of developments of production power in different periods of time. In such case increase ecological debt is characterized by increase ecologically-economic damage, and can be defined as follows:

$$\frac{\Delta Y}{Y} = \frac{\Delta Q}{Q} + \frac{\Delta(Y/Q)}{(Y/Q)},$$

where $\Delta Y/Y$ – growth rate of the damage, $\Delta Q/Q$ – growth rate of the output in economic system, $\Delta(Y/Q)/(Y/Q)$ – growth rate of damage capacity (the magnitude of the damage, caused by unit of the output). The value of damage capacity is growing with the increasing of output scale. On the other hand, if the value of damage capacity changes, damage growth also changes. Calculated growth rate of ecological debt in this way shows the necessity of joint economical development and modification of quality production power, and the transition from extensive to intensive way of the development for the achievement of sustainable development objectives and decreasing the value of ecological debt.